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U.S.DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON

Letter
Circular
LC 726

June 5, 1943

SOME NOTES ON STANDARDIZATION

With Particular Reference to Retail Package Sizes

The retail "purchasing equation" normally involves three variable factors -- price, quality, and quantity. The ordinary buyer can conveniently evaluate only two variables. Three principles of size standardization for retail marketing units are recommended:

1. Use of standard units of weight or measure as basic packing units.

2. Inclusion in packing series of multiples and binary submultiples of basic unit only.

3. Restriction of series to sizes which are "self defining" as to quantity of content.

If these principles are observed, the practical effect will be to cause the quantity variable to drop out of the purchasing equation.

If retail buying is to be conducted upon an intelligent and efficient basis, the purchaser must be able to evaluate his purchases or his potential purchases in understandable terms and to make ready comparisons among the numerous offers made to him, in order to decide which offering is most advantageous to his taste and to his pocketbook. To do this he must keep in mind three considerations -- price, quality, and quantity.

For example, suppose that the buyer's problem is to make a selection from five offered brands of packaged cookies. The prices asked for the several packages will almost certainly not be uniform. The quality factor combines such considerations as flavor, texture, richness, shape and size of the individual cookies, and the like, and the buyer must rate the offered brands according to his personal preferences. The quantities contained in the different packages may very possibly be something like this: 6 1/2, 7, 7 1/4, 7 5/8, and 8 ounces. Thus there are in the buyer's purchasing equation three factors, and each is a variable.

Now three variables can not readily be evaluated by a retail buyer; somehow he must reduce this number to two before he can accurately compare the goods from which he must choose. Under our prevailing economic system, unit prices for packages of like commodities are not uniform except in certain restricted fields; thus the price factor must, by and large, remain in the purchasing equation. Quality cannot be made uniform and will always remain to be evaluated by the individual purchaser. There remains the factor of quantity, and this, fortunately, can be standardized and thus be made to drop out of the purchasing equation; this standardization can be effected without loss to or hardship upon the seller, and with manifest advantages for both seller and buyer.

Consider again the selection from five offered brands of packaged cookies. If each package contains, let us say, 8 ounces of cookies, the most economical buy from a money standpoint is at once apparent from the package prices, and it remains only for the buyer to evaluate the factor of quality in order to fix his selection. It is no longer necessary for him to guess at, or to resort to pencil and paper to determine, the unit price, that is, the price per ounce or per pound, and the remaining variables of package price and quality offer no difficulties to rapid and accurate mental evaluation.

Standardization of the quantity factor in the purchasing equation can be effected by fixing the sizes of the retail marketing units, whereby this factor ceases to be a variable and becomes fixed for those units of like commodities which a customer must compare if he is to buy intelligently. Such standardization has already been accomplished in certain cases by legislative or regulatory action. Butter is a commodity which has been so standardized by law in a number of States, quarter-pound and one-pound

packages being those commonly specified; another such commodity is bread, the standard units commonly being one-half pound, one pound, one and one-half pounds, and multiples of one pound. The marketing units for milk and cream are very generally standardized through the medium of statutory or regulatory standardization of milk and cream bottles; standard sizes range from one gallon to one gill by binary subdivisions of the gallon.

Some industries have voluntarily adopted for a large part of their retail packages, one or more standard sizes. Examples of this are to be found in sugar (one pound and multiples of one pound), numerous varieties of processed cheese (commonly one-half pound and multiples of one pound), coffee (one pound), cider (one-half gallon and one gallon), ice cream (pint and quart), paints (gallon, and multiples and binary submultiples of the gallon). There remain, however, a large number of commodities, particularly in the food category, for which the sizes of the retail marketing units follow no system of standardization, and appear to have resulted either from a complete disregard of the principles of standardization or from a desire to meet competitive conditions by resort to the practice of repeated reductions in the amounts of commodity packed. A few examples, chosen from many which could be cited, will serve to illustrate the chaotic conditions which exist; these examples are selected from the lists of ceiling prices fixed by the Office of Price Administration for individual cities or communities, and each example is taken from the list for a single community and thus represents a size variety actually marketed in that community.

Baby food - 4 1/2, 4 3/4, 6 1/2, and 7 1/2 ounces

"Hot" cereals - 12, 14, 16, 20, 22, 24, 26, and 28 ounces

Processed peaches - 20, 21, 29, and 30 ounces

Raisins - 15 and 16 ounces

Tomato juice - 13, 14, 16, 18, 20, 23, 24, 26, 32, 46, and 47 ounces.

Standardization of package sizes in accordance with a definite and logical plan, would do much to simplify marketing and accounting processes, and would redound to the benefit of the wholesaler, the retail merchant, and the ultimate purchaser. Pricing and accounting would be much easier for the seller, important considerations at any time but especially so under rationing procedure. Competition among rival marketers would be raised to a higher plane, through removal of the quantity element as a competitive

consideration. Marketing costs should be lowered as a result of the standardization of containers, reduction of container and package inventories, and simplification of packing procedure. Consumer satisfaction would be increased and economical and intelligent retail buying would be made possible.

Moreover, under rationing, standardization of retail marketing units would make possible for the purchaser an economy in the expenditure of "points" as well as of money. Point values now are necessarily established for specified ranges or groups of weights and volumes; the same point expenditure is required for a package containing an amount of commodity corresponding to the lower limit of a particular range or group as for the package at the upper limit of that group. If ten points must be expended for a bottle of chili sauce containing any amount over ten ounces up to and including fourteen ounces, it is obvious that the unit point price of a 10 1/2-ounce bottle is considerably greater than that of a 14-ounce bottle. If marketing units were standardized, a uniform and equitable system of unit "point prices" could be established.

The question then arises, What is a logical plan for retail package standardization? It is recognized that no single detailed rule can be established which will adequately meet the needs for all packaged commodities; particularly in the matter of the number and the range of sizes, special consideration must sometimes be given to the marketing customs for a particular commodity and the circumstances of its consumer use. However, certain guiding principles can be laid down, and it should be possible, in the main, to adhere to these in drafting a program for package standardization. Such a set of principles, which is recommended by the National Bureau of Standards, is as follows:

1. From the appropriate standard table of weight or measure, select the largest basic unit which is applicable to the series, or to the portion of the series, being standardized. For example, in the case of a liquid commodity, the gallon, the quart, and the fluid ounce are basic units which might be chosen for use alone or in combination, depending upon the size range to be covered; in the case of a solid commodity, the avoirdupois pound and ounce would be comparable units.

2. Build up the standardized series to include only the basic unit or units and their multiples and binary submultiples, that is, amounts arrived at by successively dividing the unit by the factor 2.

3. Further restrict the series by reducing the number of included sizes to the practicable minimum,

striving always to make each included size "self defining" as to capacity or content in comparison with other sizes in its own series; that is to say, any size should differ from the next smaller and the next larger in the series by enough to enable a customer to tell by merely looking at that package, how much it contains.

4. When it is felt that a non-standard size -- that is, one which does not meet the requirements of item 2 -- should be included, include it only when such action can be justified on the strongest grounds of need or conservation.

To apply these principles would produce basic series as follows: In terms of weight, 1, 2, 4, 8 avoirdupois ounces, the pound, and multiples of the pound. In terms of volume, 1, 2, 4, 8 fluid ounces, the pint, the quart, the half-gallon, the gallon, and multiples of the gallon. The lower part of each of these series is derived by following the rule of starting with the basic unit -- the pound and the gallon, respectively -- and successively dividing by the factor 2. In some cases these basic series will be found inadequate, because differences between successive sizes become too great at certain points to satisfy purchasing needs; in such cases the weight series may be expanded by inserting the 12-ounce and the 1 1/2-pound sizes, and the volume series may have added the 12-ounce and the 1 1/2-pint sizes, and, if really necessary, the 6-ounce and the 1 1/2 quart sizes. On the other hand, for values above 5 pounds and 5 gallons, it is clear that if packages are to be "self indicating" as to size, successive sizes in the series should differ by more than 1 pound and 1 gallon.

Admittedly, the foregoing principles and recommendations represent an ideal -- an ideal which cannot immediately be achieved for all packaged commodities. But if it can be achieved for some commodities -- as it has been -- it seems reasonable to expect that it is only a question of time until it will be achieved for most if not all commodities.

Packers of commodities for retail sale are urged to adopt the recommended principles as a guide in their selection of marketing units, and to use them in reducing the complexity of current marketing units to an orderly series of standard sizes.

NOTE. - The National Conference on Weights and Measures, an organization composed of those regulatory officials of the States, counties, and cities of the United States who administer weights and measures laws and regulations, has consistently advocated package standardization. At the twelfth meeting of the Conference, held in 1919, the following resolution was adopted:

> Whereas we, as weights and measures officials, realize that our present laws requiring the quantity of the contents to be marked upon food in package form fail adequately to safeguard the public in the purchase of commodities so put up: Therefore be it
>
> Resolved, That this, the Twelfth Annual Conference on Weights and Measures, record its conviction that standardization of packages is vitally necessary for the proper and complete protection of the purchasers of commodities so packed.

Similar resolutions were adopted in 1920, 1921, 1937, and 1938. In 1938 a special committee was appointed to study food package standardization and make recommendations to bring this about; this committee reported in 1939 and again in 1940, bringing in recommendations for Federal legislation which in 1940 were turned over to the Legislative Committee of the National Conference. In 1941 the Legislative Committee presented a "Food Package Standardization Bill", which was approved by the Conference and which was later introduced into the Seventy-Seventh Congress as HR 6784 and referred to the Committee on Coinage, Weights, and Measures; the bill was not reported out of committee, and has not as yet been reintroduced.

References to NBS Miscellaneous Publications:

M-41, Report of 12th National Conference, p 207

M-43, Report of 13th National Conference, p 175

M-48, Report of 14th National Conference, p 110

M-159, Report of 27th National Conference, pp 109, 110

M-161, Report of 28th National Conference, pp 53, 138

M-164, Report of 29th National Conference, pp 79, 89, 125

M-165, Standardization of Packages, a reprint from NBS Misc. Pub. M-164

M-167, Report of 30th National Conference, p 145

M-170, Report of 31st National Conference, pp 110, 118, 129.